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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Henry G. Johnson et al

Serial No. 10/804,342

Filed: March 19, 2004

Title: Turbocompressor Impelling Fuel Recycle
in Fuel Cell Power Plant

Docket No. C-2960

Art Unit: 1795

Examiner: Dove, Tracy Mae

Declaration Under 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Paul R. Margiott, declare that:

1. I reside at 32 Sele Drive, South Windsor, CT 06074.
2. I have a Bachelor of Science in Chemical Engineering and a Master of Science in Mechanical Engineering and have been working in the field of fuel cells and related arts for 24 years, and am currently engaged in that field on behalf UTC Power Corporation, South Windsor, CT.
3. I have refreshed my familiarity with the matter claimed in the subject application and the relevant matter of Keefer publication US 2003/0143448 A1.
4. In [0020], Keefer states "at least one of the fuel-enriched gas stream or fuel-depleted gas stream may be recirculated to a gas turbine system...to capture the recirculation system's energy." [Emphasis added] Keefer does not describe using either gas stream to "drive a gas turbine."
5. In [0107], Keefer describes the "fuel-depleted gas stream", here referred to as "the heavy product stream", in conduit 272 from the first PSA 204, branching into conduit 274 to the combustor 206.
6. In [0105], Keefer states "After expansion in a first expander 240, the post-reformed anode gas is reheated by coil 249 in combustor 206 and conveyed by conduit 248 to the inlet of second expander 242." The same is true in Figs. 7-10, 13, and 14.
7. In [0124], Keefer describes combusting the fuel-depleted, heavy product gas with cathode exhaust to heat an engine, as shown in Figs. 11 and 12.
8. Each of the disclosures referred to in paragraphs 5-7 above, satisfies the quoted phrase from [0020] in paragraph 4, above. The phrase quoted in paragraph 4, above,

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does not mean, "drive a turbine with fuel cell anode inlet fuel", to one skilled in the fuel cell and fuel processing arts.

9. Nowhere in Keefer is there a disclosure of the "fuel-enriched gas" recirculating to a turbine system to recapture the energy in the recirculated gas, except for the unsupported phase in [0020].

10. The lower half of Keefer's [0020] refers to a pressure swing absorption unit, not a fuel cell. The "pressure swing absorption model could establish a pressure gradient in a fuel-containing gas stream under conditions sufficient for separating the fuel-containing gas stream into a fuel-enriched gas stream and a fuel-depleted gas stream." Therefore, the designations, "fuel-enriched gas stream (anode inlet gas) or fuel depleted gas stream (anode exhaust gas)" are clearly incorrect.

11. As stated in paragraph 6 of the Declaration of Paul R. Margiott dated March 16, 2007, "in all embodiments, the power to drive turbines is derived from the anode exhaust." The turbines are driven directly by the exhaust gas flow in Figs. 6-10, 13 and 14. Figs. 11 and 12, having an engine and not a turbine, are irrelevant to the claims herein.

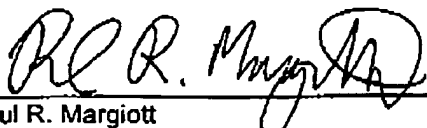
12. In Keefer, the "hydrogen-rich fuel gas...applied to said fuel reactant flow fields" (claim 1, lines 7-8) is in the conduit 233; it comes from the "source" 232 which receives a mix of gases in conduit 231 including (a) fuel enriched gas from conduit 275 and check valve 277 [0109], and (b) feed gas (natural gas) from a supply inlet 230 [0098]; and (c) steam may also be provided to source 232, including anode exhaust recycle [0090].

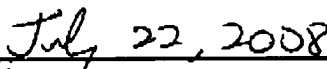
13. The source 232 provides desulfurization and may generate syngas or methane [0098].

14. In [0113] and [0128] Keefer states that the "fuel-enriched gas", hydrogen, may be delivered externally in conduit 262 through valve 260, in which case electric power output is reduced.

15. The "fuel-enriched gas", which is in conduit 275, is not the gas in conduit 233 "applied to said fuel reactant flow fields", nor is the turbine driven by the "fuel-enriched gas" in conduit 275.

All statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.


Paul R. Margiott


Date